No.	Solution Name	Solution Summary (used to derive relevance)	Date of Initial Entry	Date of Last Update	Implementation Strategy	Benefits of Proposed Implementation Solutions	Data Quality Information Management Phases	Stakeholders Identified	Solution Class
1	Collaboratory for quAlity Metadata Preservation (CAMP) - ASDC	CAMP is currently being developed and expanded upon for the ASDC metadata reconciliation efforts. As development progresses, the ASDC will leverage this platform as a centralized repository for metadata entry/revisions, new data submission requests, and interoperability for both internal (i.e. OPenDAP) and external (i.e. CMR REST API) systems to streamline metadata management and increase transparency for the data ingest process. The end goal is to provide a UI for direct metadata entry by ASDC members and data providers. Validate CMR Compliance. Metadata for current ASDC (BEDI identified) data products has been imported into the CAMP Database and are within weeks of being validated by science teams. Depending on required CMR fields, there may be fields added.	2015-09		Facilitate DAAC - PI Communication; Support Metadata Creation (dataset-level)	1. Confidence in metadata accuracy 2. Quick and easy to provide metadata 3. Metadata completeness	Capturing	1. DAACs 2. MEaSUREs Pis 3. NASA Flight Mission Science Data Systems 4. Science Mission Pis 5. ESDIS (GCMD/CMR)	A
2	Metadata Compliance Checker (PO.DAAC)	Provides tool for both DAACs and Data Producers to evaluate metadata standards compliance at granule level. Multiple forms of compliance check: ACDD, CF, ... quality flags, completeness/compliance, ... netCDF/HDF/OPeNDAP, Target at data producers as major user community. Output report from the checker will contain useful information and be exposed to end users? validate time against ISO 8601	2015-09		Standards Compliance Checking and Reporting (granule-level); Support Metadata Creation (granule-level)		Capturing; Enabling Use	1. DAACs 2. MEaSUREs Pis 3. NASA Flight Mission Science Data Systems	A, B
3	ATRAC (NOAA/NCEI/NCDC)	Provides open web form for metadata entry by data producer which is interfaced with a backend metadata archive database maintained by the data center. Note: Whether this resource/tool is developed directly by ESDIS or by a DAAC, the important aspect is that the DAAC must have immediate access to the metadata that is input by this tool for the purpose of verifying accuracy and completeness.	2015-09		Support Metadata Creation (dataset-level); Standards Compliance Checking and Reporting (dataset-level);		Capturing	1. DAACs 2. MEaSUREs Pis 3. NASA Flight Mission Science Data Systems 4. ESDIS (GCMD/CMR)	A, B
4	ORNL DAAC Ingest Automation System	Tool is developed by ORNL DAAC and provides a more automated workflow for data submissions intended to increase efficiency of DAAC/Producer communications regarding new datasets or new versions of datasets. Tool could be optimized or extended to include additional information exchange for data quality and or quality flag information. Core functions include: 1) Track data ingest; 2) Automate ingest; 3) Streamline communication; 4) Central management system	2015-09		Facilitate DAAC - PI Communication; Support Metadata Creation (dataset-level);		Capturing	1. DAACs 2. MEaSUREs Pis 3. NASA Flight Mission Science Data Systems	A, B
5	Ocean CO2 Metadata Collection Form	Collection-level metadata collection form developed by ORNL for oceanic in situ observation datasets tailored for CO2 collection. Could potentially be extended to include satellite datasets. Same as the metadata editor in the ORNL DAAC Ingest Automation System	2015-09		Metadata creation support (dataset-level)		Capturing; Describing	1. DAACs 2. MEaSUREs Pis 3. NASA Flight Mission Science Data Systems 4. ESDIS (GCMD/CMR)	A, B
6	Data Quality Guide Document	A standardized template document design to provide users with familiar and comparable data quality guidance for all data sets sharing a common measurement parameter. Data quality templates for MEaSUREs to fill out.	2015-09		Guidance, Instruction, and Dissemination (for data users)		Capturing; Describing; Enabling Use	1. DAACs 2. MEaSUREs Pis 3. NASA Flight Mission Science Data Systems	B

7	ACT-America Science Data Working Group	A Science Data WG, including participants (funded by the project) from data centers (ORNL DAAC and ASDC) and different research groups, was formed in the ACT-America project to 1) coordinate data management activities with instrument teams, modelers, remote sensing, and external data sources and 2) ensure data, products, and information required to address science questions are available in harmonized forms when needed. Telecons are held periodically to exchange any data-related thoughts between research groups and the data centers. Currently solution is applicable to modeling (ORNL DAAC) and Airborne observations (ASDC) components of ACT-America data management; But can be applicable to others.	2015-09		Facilitate DAAC - PI Communication	1. Coordinate data management activities with instrument teams, modelers, remote sensing, and external data sources 2. Ensure data, products, and information required to address science questions are available in harmonized forms when needed.	Capturing; Describing	1. DAACs 2. MEaSUREs Pis 3. NASA Flight Mission Science Data Systems 4. ESDIS	B
8	(NASA) Science Advisory Team	A NASA assigned team to review data for each project/product, such as "NASA SAT MEaSUREs WELD". These scientists would be assigned to a project/product team, are recognized as experts in the specified field(s), and serve to advise the verification and quality of final distributed products.	2015-09		Data Quality Information (science perspective); Guidance, Instruction, and Dissemination	1. Provides early adopters to data products from NASA Earth Science remote sensing projects. 2. Provides beta testers for MEaSUREs ESDRs.	Capturing; Describing; Enabling Use	1. DAACs 2. MEaSUREs Pis 3. NASA Flight Mission Science Data Systems 4. ESDIS	B
9	Data Quality Section in Data Management Plan	Recommend including a section on data quality in the Data Management Plan to be created for each project, such as MEaSUREs, after the award, as a living document to be updated as more details about the data are identified. (It is possible that the initial version of the DMP is prepared before details are known, since it is to be delivered early in the project).	2015-09		Guidance, Instruction , and Dissemination (for data producers and DAACs); Facilitate DAAC - PI Communication; Dissemination on Data Quality Information;		Capturing; Describing	1. MEaSUREs Pis 2. NASA Flight Mission Science Data Systems 3. DAACs	B
10	DAACs DMP (or Data Management Guidlines)	Some DAACs (e.g., PODAAC,SEDAC, ...) write their own DMPs for specific datasets or a collection of datasets for the purpose of managing datasets throughout their lifecycle. PO.DAAC is currently finalizing a standardized template for the DAAC-specific DMP. The SEDAC Data Nomination template is used internally and contains sections to capture data quality information. The ORNL DAAC doesn't have DMPs for specific datasets. Instead, it provides general guidance for data providers to conduct data management and prepare for data archival.	2015-09		Guidance, Instruction , and Dissemination (for data producers and DAACs); Facilitate DAAC - PI Communication		Capturing; Describing	1. DAACs 2. ESDIS 3. PIs/ NASA Flight Mission Science Data Systems	B
11	Kayako	Several DAACs have integrated Kayako, a customer service software, into their Websites to replace old ways of conducting user support. User questions and feedbacks for different DAACs are now managed consistently.	2015-09		User Services (Help Desk); Knowledgebase (for data users)	Kayako provides an integrated system for ESDIS and individual DAACS to easily track and coordinate user questions and feedbacks related to data products, websites, tools, etc. It also allows individual DAACs to easily compile knowledge bases and FAQs by pulling past user support records from Kayako system.	Describing; Facilitating Discovery; Enabling Use	1. DAACs	A, B

12	Daymet Website	The ORNL DAAC developed a project website dedicated for Daymet: http://daymet.ornl.gov . It is different from the landing pages of Daymet data sets. This website provides information about Daymet data description, documentation, visualizations, data access tools and services, publications using Daymet data, Daymet-related tools contributed by the users community, and news update.	2015-09		Data quality information (program-specific collection);	Daymet website can be considered as one way to convey data product, including quality, information to data users. Daymet is becoming probably the most popularly used data product recently. The Daymet website helps a lot, even though it's hard to quantify its impact on this popularity.	Enabling Use	1. DAACs 2. MEaSUREs Pis	A, B
13	Identify different ways in which DAACs are conveying data quality information	Identify different ways in which data quality information (e.g. quality flags and known issues) is being conveyed by various DAACs. Understand why they need to be different. To the extent possible arrive at common approaches. At least a minimal common set of items should be shown on data quality pages at the DAACs.	2015-09		Data quality information (dataset-level); Different approaches for data quality information (dataset-level)	Although most user guides contain some information on data quality, it would be good to provide guidance so that it is consistent and complete as possible.	Describing; Facilitating Discovery	1. DAACs	B
14	FAQ Development and Analysis (UserVoice)	Populate a set of FAQs for each new data set upon release by anticipating possible questions that users might ask. From FAQ, identify data sets receiving excessive questions as those to be considered for dissemination of additional or enhanced documentation. SEDAC example	2015-09		User Services (Help Desk); Knowledgebase (for data users)		Describing; Facilitating Discovery; Enabling Use	1. DAACs	A,B
15	NASA GSFC Data Quality Screening Service	A tool developed by Christopher Lynnes & Richard Strub for GES-DISC. "DQSS is designed to screen data using both ontology based criteria and user selections of quality criteria (such as minimal acceptable QualityLevel). Data that do not pass the criteria are replaced with fill values, resulting in a file that has the same structure and is usable in the same ways as the original." This service can be utilized before data ingest for the distributor. This service can also be utilized by the public - to further screen the product's quality.	2015-09		Data quality screening (granule-level filtering)	Provides DAACs a tool to understand quality attributes for overall documentation to product validation. Provides Users a tool to better understand how data decisions regarding quality were established.	Capturing; Facilitating Discovery; Enabling Use	1. DAACs 2. NASA Flight Mission Science Data Systems	A
16	CF granule metadata	Implementation of CF Conventions for quality variables to require flag_values, flag_mask, flag_meanings CF attributes	2015-09		Guidance and instruction; Data quality and information		Capturing; Describing; Enabling Use	1. DAACs 2. MEaSUREs PIs 3. NASA Flight Mission Science Data Systems 4. Other data producers	B
17	Document Error Sources/Limitations/ Quality Assessment	Provide guidance to DAACs on including detailed information in product user guides that describes the limitations &/or quality of the data	2015-09		Data quality and information; User Services	Although most user guides contain some information on data quality, it would be good to provide guidance so that it is consistent and complete as possible.	Describing; Facilitating Discovery	1. DAACs	B

18	LP DAAC Project Lifecycle Plan (PLP)	This document is written from the point of view of the LP DAAC, advocators for products as they move through the lifecycle from Inception to Active Archive to Long Term Archive, and advocators of products that adhere to interoperability standards. Product capture is the first step in providing community-wide access to data and information. PO.DAAC has a very similar policy that covers a series of project lifecycle planning documents and artifacts known as the "Dataset Lifecycle Policy".	2015-09		Guidance and instruction	DAAC Scientist is part of the NASA funded dataset development - with focus on guidance and communication from the project start.	Capturing; Describing; Enabling Use	1. DAACs 2. MEaSUREs PIs 3. NASA Flight Mission Science Data Systems 4. ESDIS	B
19	EUFAR Metadata Creator	Online metadata authoring tool that creates INSPIRE-compliant metadata in XML for the EU Facility for Airborne Research. But only free text for quality input.	2015-09		Metadata creation support	Facilitates entry of metadata and produces output that is standards compliant in content and format.	Capturing; Describing	metadata authors	A
20	ISO Data Quality elements	A webpage describing elements of the ISO 19157 data quality metadata standard	2015-09		Guidance and instruction; Metadata creation support	Until there is a NASA profile of the ISO metadata standard, metadata authors need guidance on how to express quality in ISO. This provides a guide.	Capturing; Describing; Enabling Use	metadata authors	B
21	schema for ISO metadata, including Data Quality	zip file containing schema for all 19115 and related metadata ISO standards	2015-09		Metadata creation support	If authoring metadata conforming to ISO standards (without a tool, or in customizing an existing tool) one need the schema for the standard.	Capturing; Describing	metadata authors	B
22	NCO Utilities for granule level metadata authorship, editing, and standardization	allows addition/modification of quality attributes in netCDF files	2015-09		Metadata creation support	Facilitates creation and modification of metadata that complies with CF conventions. Specific to netCDF and HDF. Being expanded under EarthCube award "Advancing netCDF-CF for the Geoscience Community"	Capturing; Describing; Facilitating Discovery; Enabling Use	1. DAACs 2. MEaSUREs PIs 3. NASA Flight Mission Science Data Systems	A, B
23	AADC Metadata XML conversion script	py script that loops over metadata DIF XML files and converts them to other XML formats using XSL files.	2015-09		Metadata creation support	This script would be useful for converting existing GCMD DIF records to, e.g. ISO.	Capturing; Describing; Enabling Use	metadata authors	A
24	PO.DAAC User Forums	The PO.DAAC has established a user forum to service user inquiries on all data issues including data quality concerns. This forum is URS-compliant and also provides the ability to directly create a Kayako ticket for timely help desk support.	2015-09		User Services (Help Desk); Knowledgebase (for data users)	Provides FAQ's, data recipes, discussions on data quality issues, and discipline-specific discussion threads.	Capturing; Describing; Facilitating Discovery; Enabling Use	1. DAACs 2. MEaSUREs PIs 3. NASA Flight Mission Science Data Systems 4. Other data producers 5. Data users	A, B
25	Virtual Quality Screening Service	Provides an interface to screen L2/L3/L4 SMAP and GHRSST physical retrieval observations using quality information (variables) contained within the granules. Provides a data extraction method once the quality screening filters have been defined. Returns only the quality filtered data.	2015-09		Data Quality Information Representation; Guidance, Instruction, & Dissemination	User extracts only the data that meets their quality specifications set using quality flags, bit flags, or other variables.	Capturing; Describing; Facilitating Discovery; Enabling Use	1. DAACs 2. MEaSUREs PIs 3. Data Users	A
26	MODIS Python Toolbox for ArcGIS	Data values in MODIS quality layers are store as bit-packed integer values. To get at the information stored in the data values, users must first converted the integer value to its binary representation then interpret each specified bit combinations (bit words) which characterize particular quality attributes. The MODIS Python Toolbox contains a tool (DecodeQuality) that decodes MODIS quality layers, and returns individual thematic GeoTIFFs for each quality attribute.	2015-09		Data quality information	Provides thematic GeoTIFFs for each quality attribute contained in the original bit-packed data value.	Enabling Use	MODIS Data Users	A